

MONITORING AND EVALUATION PROGRESS REPORT

Lower Snake River Compensation Plan
Nez Perce Tribe Hatchery Evaluation Studies

Fiscal Year 2013

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2013 MONITORING AND EVALUATION PROGRESS REPORT

1. Objectives

A. General

This report outlines the activities that were planned and completed in fiscal year 2013 (October 1, 2012 – September 30, 2013). The goal of the Nez Perce Tribes' LSRCP evaluations program was structured to monitor aspects of LSRCP hatchery production performance, natural production status and performance, promote genetic conservation, and to contribute to the co-management of the LSRCP program. Monitoring of the performance of hatchery production involved pre-release sampling, marking, estimating post-release survival, and estimating the percentage of LSRCP adult hatchery fish that contributed to spawning. Monitoring activities included adult escapement of both natural and hatchery origin Chinook salmon and steelhead in several key spawning aggregates, pre-release sampling of LSRCP hatchery-produced Chinook salmon and steelhead, monitoring of life stage survival of naturally and hatchery produced Chinook salmon and steelhead, and identification of the genetic stock structure. Specific activities included the investigation of downstream emigrating juvenile Chinook salmon and steelhead in the Imnaha River to document emigration timing through the Imnaha River and emigration timing, travel time and survival estimation to Snake River dams; estimation of adult steelhead spawner abundance in small tributary streams in the Imnaha River subbasin using picket weirs; conduct spawning ground surveys to evaluate hatchery and natural Chinook salmon adult spawning in the South Fork Salmon River (SFSR) basin.

Category 1. Fish Culture and Production Activities

Project 1a – Production Monitoring

- Participate in planning processes through assisting in the development of Annual Operating Plans (AOPs) for the culture, ponding, rearing, and ultimate release of steelhead and Chinook salmon in the Snake River basin.

Completed: NPT staff participated in the Clearwater, Lyons Ferry, Northeast Oregon and Salmon River pre AOP and final AOP documents.

Project 1b – Disease Monitoring, Prevention, and Treatment

- No Monitoring and Evaluation Activities Planned

Project 1c – Optimum Production Strategies

Objective 1: Determine the emigration timing of hatchery reared spring/summer Chinook salmon and steelhead and estimate the post-release survival of hatchery reared Chinook salmon and steelhead smolts released in the Imnaha River.

Task 1.1 - Install and maintain the rotary screw trap in the lower Imnaha River. Activities will be in coordination with the Smolt Monitoring Project (Bonneville Power Administration project).

Completed: LSRCP personnel assisted with the installation and removal of the rotary screw trap in the lower Imnaha River.

Task 1.2 – Coordinate the initiation of remote monitoring of PIT tagged hatchery Chinook salmon volitional release behavior from the Gumboot Acclimation Facility (includes installation and operations).

Completed: The screw trap monitors volitional release behavior of fish released from the Gumboot acclimation Facility through the evaluation of captures.

Task 1.3 – Assist with the operation of the rotary screw trap to determine the relative timing of emigration. Generally LSRCP staff assists trapping activities from late February through mid June and again from early October through late November, representing the peak migration periods for juvenile Chinook salmon and steelhead.

Completed: LSRCP staff assisted with screw trap operation during this period, providing limited assistance from January – February, extensive assistance from March – June and again from October – November.

Task 1.4 - Conduct trap efficiency trials for hatchery-reared Chinook salmon smolts (fin clips and PIT tags – 3,000 per year).

Completed: trap efficiencies were estimated for hatchery-origin Chinook salmon using previously PIT tagged smolts captured in the trap. Results will be presented in the 2011-2013 Smolt Monitoring Project Report.

Task 1.5 – Sub-sample fish to collect length, weight, and condition (health/physiology) information.

Completed: Ten hatchery-origin Chinook salmon and steelhead were sampled for condition each day, when available.

Task 1.6 - Compare the emigration timing of hatchery-reared and natural-origin Chinook salmon smolts.

Completed: emigration timing of hatchery and natural Chinook salmon was compared. Results will be presented in the 2011-2013 Smolt Monitoring Project Report.

Task 1.7 - Estimate the post-release survival of hatchery Chinook salmon and steelhead from the release point to the lower Imnaha River trap using PIT tag recoveries and the SURPH model. From this model the total estimated passage of hatchery Chinook salmon and steelhead will be determined along with an estimated post-release survival in the Imnaha River.

Completed: Survival and abundance to the lower Imnaha River screw trap were estimated. Results will be presented in the 2011-2013 Smolt Monitoring Project Report.

Task 1.8 - Share weekly Imnaha River natural and hatchery summer Chinook salmon and steelhead smolt emigration catch information with the Fish Passage Center.

Completed: Fish Passage Center was updated on a weekly basis from March – June.

Objective 1.2: Investigate the effect of water temperature and river discharge on emigration timing from the Imnaha River for natural- and hatchery-produced juvenile Chinook salmon and steelhead.

Task 1.2.1 - Monitor USGS staff gauge information.

Completed: Monitored daily to assess trapping conditions

Task 1.2.2 - Monitor daily water temperature with a constant recording thermograph at the lower Imnaha River emigrant trap site. Download thermographs on a regularly scheduled basis.

Completed: Thermographs were operated in the mainstem Imnaha River near the screw trap, Camp, Horse and Lightning Creeks.

Task 1.2.3 - Examine relationships between smolt emigration/survival and stream temperature and river discharge.

Completed: The relationship between stream flow and Smolt emigration patterns were examined. Results will be presented in the 2011-2013 Smolt Monitoring Project Report. In addition, juveniles tagged by this project are used by the Fish Passage Center to evaluate survival through the hydrosystem as it relates to river flow and temperature.

Objective 2. Determine and compare the migration timing, travel time, emigration survival, and smolt-to-adult survival of natural-origin and hatchery-reared Chinook salmon and steelhead from the Imnaha River through the Snake River to Lower Granite Dam and to McNary Dam if possible.

Task 2.1 - PIT tag 20,000 emigrating natural-origin Chinook salmon representatively across the entire emigration period. Total tag numbers are a combination of LSRCP and SMP tags, with 12,000 tags provided by LSRCP.

The goal was to tag 20,000 natural-origin Chinook in FY2012 (Oct 1, 2012 – Sept. 30, 2013). Total natural-origin Chinook salmon juveniles tagged over this period was 10,993, including 6,264 in fall 2011 and 4,729 in spring of 2012. This was below our tagging goal, but representative tagging enable a population estimate of juvenile Chinook salmon emigrating from the Imnaha River and allowed for survival estimates

and the calculation of an index of smolt to adult survival (SAR) estimates.

Task 2.2 - PIT tag 5,000 emigrating natural-origin steelhead representatively across the entire emigration period (emphasis given to spring smolts due to multiple age emigration behavior). All tags are proved by LSRCP.

Completed: We PIT tagged 7,046 natural-origin steelhead representatively across the emigration period.

Task 2.3 – Release 50 natural-origin Chinook salmon and 50 natural-origin steelhead approximately 3.0 km above the screw trap to estimate screw trap efficiencies on a weekly basis. Results will be used to estimate juvenile population abundance in the Imnaha River for each species.

Completed: Trap efficiencies were calculated for both juvenile Chinook salmon and steelhead at the Imnaha River trap. Juvenile abundance estimates will be presented in the 2011-2013 Smolt Monitoring Project Report.

Task 2.4 - Estimate survival of natural- and hatchery-origin Chinook salmon and steelhead smolts, through use of the SURPH.2 model, to LGR and through the Snake River to McNary Dam (if possible).

Completed: Survival of natural- and hatchery-origin Chinook salmon and steelhead was estimated to Lower Granite Dam and McNary Dam. Results will be presented in the 2011-2013 Smolt Monitoring Project Report.

Task 2.5 - Interrogate previously PIT tagged and released hatchery-origin Chinook salmon smolts at the Imnaha River trap and use these fish as a release group to compare with natural-origin Chinook salmon smolts.

Completed: Results will be presented in the 2011-2013 Smolt Monitoring Project Report.

Task 2.6 - Determine the emigration timing, travel time and estimated survival of emigrating natural- and hatchery-origin Chinook salmon and natural steelhead smolts from the Imnaha River to LGR and other Snake and Columbia River dams.

Completed: Release groups were used to estimate emigration timing, travel time and survival to LGD and through the hydrosystem. Results will be presented in the 2011-2013 Smolt Monitoring Project Report.

Task 2.7 - Statistically compare the variables under Task 1.6 for natural and hatchery steelhead smolts.

Completed. Results will be presented in the 2011-2013 Smolt Monitoring Project Report.

Task 2.8 - Coordinate with the appropriate agencies to collect PIT tag passage data for both juvenile and adult life stages at LGR and other Snake and Columbia River dams.

Completed: PIT tag passage data was acquired from the PTAGIS database.

Task 2.9. - Determine an index of smolt-to-adult return (SAR) rates from release to Lower Granite Dam for natural Chinook salmon and steelhead PIT tagged in the lower Imnaha River and for PIT tagged Chinook salmon and steelhead groups released into the Imnaha River.

Completed: Adult returns in 2013 completed brood year returns for 2008 (Chinook salmon) and 2009 (steelhead). SAR rates will be presented in the 2011-2013 Smolt Monitoring Project Report.

Category 2 – Estimating Adult Returns

Project 2a – Catch Accounting

Task 1. Marking and Tagging:

- No Monitoring and Evaluation Activities Planned

Task 2. CWT Recovery and reading:

The Nez Perce Tribe processes adult CWT recoveries from Chinook salmon spawning ground carcass recovery efforts. NPT LSRCP efforts include recoveries from the upper Big Creek and from the SFSR below the LSRCP adult weir. In addition, CWT recoveries from any adult steelhead mortalities captured from Horse, Cow and Lightning creek weirs in the Imnaha River drainage will be read. All tags are extracted, read, and uploaded to the Regional Mark Processing Center (RMIS) database system.

Completed (partially): All CWTs collected in the SFSR and Big Creek were recovered and read. They have not yet been uploaded to RMIS.

Task 3. Fishery Catch Estimation and Sampling:

- No Monitoring and Evaluation Activities Planned, See Harvest Monitoring Statement of Work.

Project 2b – Estimating Project Area Escapement

Objective 3. Assess adult Chinook salmon abundance and monitor trends in population status.

Task 3.1 - Conduct multiple ground count Chinook salmon spawning ground surveys in the SFSR (below the adult weir, Figure 2). The stream reaches in the SFSR include: the adult weir

to Dime Creek (5.1 km), Dime Creek to the unnamed tributary downstream of Mirror Creek (5.6 km), Poverty Flat (1.1 km), and Lodgepole Campground to Phoebe Creek (6.1 km).

Completed: four passes were completed in the SFSR

Redds by section and total redds counted in the South Fork Salmon River in 2013

Section	Redds
Weir to Dime Cr.	55
Dime Cr. To Unnamed tributary	35
Poverty Flat	42
Lodgepole C.G. to Phoebe Creek	56 ¹
Total	188

¹Estimate: A high water event precluded a final survey, total included an estimate based on the average proportion of redds counted during the final survey from 1998 – 2012 surveys.

Task 3.2 - Collect biological information from all adult Chinook salmon carcasses encountered on the South Fork Salmon River downstream of the adult weir. Biological information collected from salmon carcasses will include measuring fork length, internal examination for sex and percent spawned, examination for marks, tags and fin clips, removal of snouts from coded-wire-tagged fish, and taking of scales or fin rays for age and growth analysis and age structure determination.

Completed:

Chinook salmon carcasses by section and total carcasses recovered in the South Fork Salmon River in 2013

Section	Carcasses
Weir to Dime Cr.	29
Dime Cr. To Unnamed tributary	49
Poverty Flat	43
Lodgepole C.G. to Phoebe Creek	14
Total	135

Task 3.3 - Determine hatchery:natural adult composition on the spawning grounds in the South Fork Salmon River below the adult weir using known hatchery adipose and ventral fin clip marks and the presence of cwt's.

Completed: adult hatchery/natural composition was estimated from recovered carcasses. Hatchery fraction in the weir to Dime Creek and Dime Creek to Unnamed tributary (combine) was estimated to be 56.5% hatchery. Hatchery fraction in the weir to Poverty Flat and Lodgepole CG to Phoebe Creek (combine) was estimated to be 7.1% hatchery

Task 3.4 – Conduct multiple pass ground count surveys in the EFSFSR to assess the spawning

success of McCall Hatchery adult outplants.

Completed: A single spawning ground survey was completed in the EFSFSR resulting in an estimated 41 redds.

Task 3.5 – Assist with the operation of the remote PIT tag array in the lower SFSR. The Integrated Status and Effectiveness Monitoring (ISEMP) Project will lead the operation and maintenance of the array and coordinate data transfers to the Ptagis website (<http://www.ptagis.org/>).

Completed: the remote PIT tag array was operational for the entire year.

Task 3.6 - Calculate age structure and sex composition of the spawning population for application in determining adult spawner to spawner ratios by brood year.

Completed: adult age and sex composition was calculated from recovered carcasses. Age composition was estimated by coded wire tag recoveries and length analysis based on returns to the McCall Hatchery Weir (data provided by IDFG). Sex composition was estimated by internal examination of the gonads.

Task 3.7 - Coordinate spawning ground survey information with other ongoing projects in the South Fork Salmon River to examine dispersion of McCall Hatchery reared Chinook salmon into other tributary streams.

Completed: Coordinated with the Idaho Salmon Supplementation (ISS) Project, IDFG McCall Hatchery Trap crews and M&E personnel and Johnson Creek Artificial Propagation and Evaluation (JCAPE) Project.

Task 3.8 - Prepare reports summarizing adult salmon spawning ground surveys.

Completed: A comprehensive report covering all NPT spawning ground survey activities, including surveys conducted under this project, was completed for the 2012 spawning ground surveys. Results from 2013 will be completed by the NPT Research Divisions' Adult Technical Team in 2014.

Subobjective 3.2. Assist IDFG, USFWS and ODFW with ongoing LSRCP evaluation studies to achieve Nez Perce Tribe participation in the LSRCP program.

Task 3.2.1 - If possible, assist ODFW in Chinook salmon spawning ground surveys in Oregon on the Imnaha River, Big Sheep Creek and Lick Creek to evaluate the LSRCP stocking program, and in the Lostine River, Minam River, and Wenaha River. Snouts from coded-wire-tagged Chinook carcasses will be provided to ODFW for wire tag interrogation.

Completed: LSRCP staff assisted with spawning ground surveys in the Lostine, Imnaha and Wenaha Rivers.

Task 3.2.2 - Coordinate and assist with marking efficiency evaluation for production release Chinook salmon at Lookingglass Fish Hatchery.

Completed: LSRCP staff assisted with marking efficiency evaluation for production releases at Lookingglass Hatchery. Assistance at McCall Hatchery was not needed.

Task 3.2.3 - Coordinate and assist ODFW in PIT tagging of Imnaha River juvenile Chinook salmon at Lookingglass Fish Hatchery and juvenile steelhead at Irrigon Fish Hatchery and collection of biological information on Imnaha River juvenile Chinook salmon and Little Sheep Creek steelhead prior to release and adult returns to Oregon facilities if needed.

Completed: LSRCP staff assisted ODFW with PIT tagging of Imnaha River Chinook salmon at Lookingglass FH and Irrigon FH.

Objective 4. Determine adult steelhead abundance and spatial structure in the Imnaha River subbasin.

Task 4.1 – Install and operate a flat-panel floating weir in Horse Creek to evaluate adult steelhead spawner escapement, demographics and hatchery:natural composition.

Completed: a flat-panel weir was installed in Horse Creek.

Task 4.2 - Maintain constant recording thermographs in Horse, Cow and Camp Creeks to characterize water temperatures.

Completed (partial): Thermographs were operated in Horse Creek and water temperature was characterized.

Task 4.3 - Describe the adult steelhead spawner migration timing in relation to water temperature and stream discharge in Horse Creek and Camp Creek.

Completed: adult steelhead were monitored in Horse Creek and Camp Creek.

Task 4.4 - Prepare annual reports summarizing adult steelhead escapement monitoring activities.

In Progress: A comprehensive Imnaha River adult steelhead report will be produced with data and analysis from this project (LSRCP) and the NPT Imnaha River Steelhead Escapement Project (BPA).

Task 4.5 – Coordinate the implementation of systematic adult steelhead escapement sampling in key tributaries in the Imnaha River subbasin with the NPT Imnaha River Steelhead Escapement Project (ISAM).

Completed

Task 4.6 – Work with NOAA Fisheries to complete genetic stock structure analysis of steelhead in the Imnaha River subbasin. Utilize adult samples from Horse, Cow and Lightning Creeks to finalize study.

Samples collected from Horse Creek steelhead were sent to the IDFG Genetics lab to be analyzed as part of the Snake River stock structure baseline.

Project 2c – Smolt to Adult Survival

Completed: see Objectives 2 & 3.

Category 3 – Legal Obligations

Objective 5. Coordinate Nez Perce Tribe evaluation studies with the National Marine Fisheries Service and U.S. Fish and Wildlife Service. Participate in planning activities associated anadromous fish production and management in the South Fork Salmon, Grande Ronde, and Imnaha river basins.

Task 5.1 - Provide technical assistance describing Nez Perce Tribe LSRCP evaluation studies for HGMPs through Section 4 or 10 permits.

Completed

Task 5.2 - Provide updated evaluation activities to modify Section 10 permits as necessary.

Completed

Task 5.3 - Provide annual reports to NOAA and the USFWS which summarize project activities relating to listed Chinook salmon, steelhead and bull trout subpopulations under the Endangered Species Act.

Completed

Task 5.4 – Participate in planning and implementation activities for developing population specific management and recovery plans for the Salmon, Grande Ronde, and Imnaha populations as specified in the Snake River spring/summer Chinook salmon recovery plan.

Ongoing

Task 5.5 – Participate in recovery planning by providing assistance as requested by ODFW, TRT, USFWS, and NOAA regarding status and limiting factors of spring/summer Chinook and steelhead populations.

Ongoing

Task 5.6 – Participate in coordination teams to account for all LSRCP fish that leave as juveniles and account for all fish returning as adults, to facilitate a review of the LSRCP program and provide recommendations for future management of the LSRCP program.

Completed: Assisted with the fall Chinook salmon program review. Attended annual operation (AOP) planning meetings for all LSRCP funded projects and provided comments and guidance. Annual operation plan meeting areas include: Northeast Oregon, Clearwater, Salmon, and Fall Chinook.

Category 4 – Electronic Database Systems

Objective 6. Develop electronic database system that will incorporate critical performance measure data that will be utilized in future recovery and planning efforts.

Task 6.1 - Design field data collection databases according to protocols established by the Research Division Technical Teams.

Ongoing: Database servers were purchased and network planning and development was initiated.

Task 6.2 - Coordinate and maintain databases so they are accessible to all NPT division employees.

Completed

Task 6.3 - Work with LSCRP program to facilitate cooperator access and for use in LSRCP workgroups to facilitate evaluation of overall LSRCP program.

Completed: Coordinated with LSRCP office on program evaluations

Task 6.4 – Provide pertinent products to the larger LSRCP program as competed.

Completed: Coordinated with LSRCP office on program evaluations

Category 5 – Peer Review, Biometric Review, Analysis and Reporting

Objective 7. Reporting of summarized results of completed objectives.

Task 7.2 – Submit following annual reports:

Title	Period Covered	Final Report Date	Current status
Nez Perce Tribe – 2012 Salmonid Gamete Preservation Project- Annual Report	2012-2013	Dec. 10, 2013	<i>Completed</i>
Nez Perce Tribe – 2009 Juvenile Imnaha River Annual Report	2009	July 30, 2012	<i>Completed</i>
Nez Perce Tribe – 2010 Juvenile Imnaha River Annual Report	2010	November 30, 2012	<i>In review</i>
Nez Perce Tribe – 2001-2007 Adult steelhead activities in the Imnaha River Basin.	2001-2007	June 30, 2012	<i>In review</i>

Category 6 – Participation in External Forums

- No Monitoring and Evaluation Activities Planned